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Product Specification

SPECIFICATION

FOR

APPROVAL

Title	47.0” WUXGA TFT LCD

BUYER	
MODEL	BR470D20
SUFFIX	LG

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Product Specification

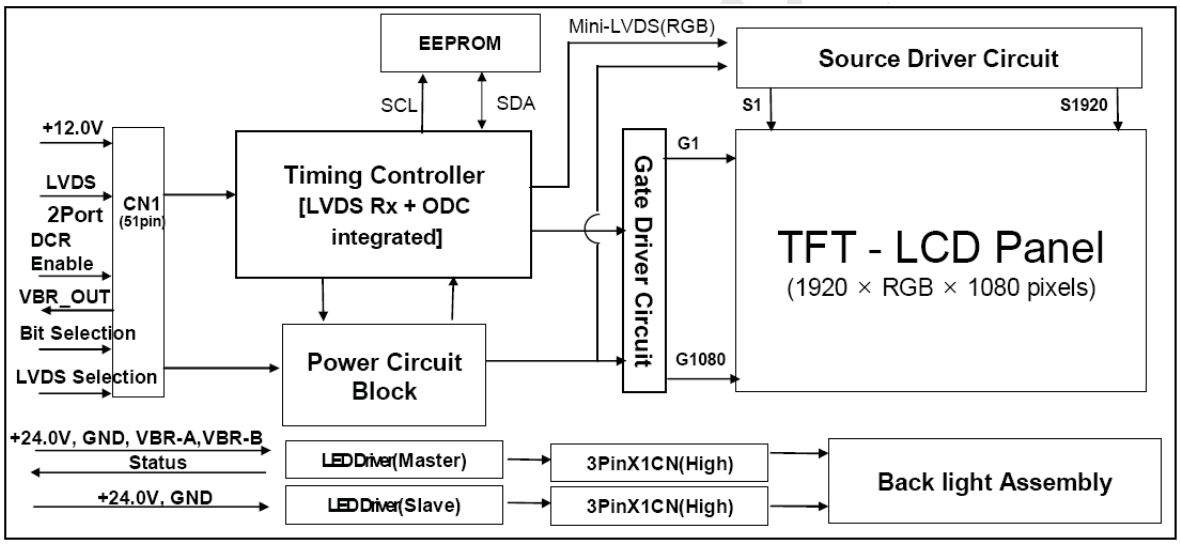
1. General Description

The BR470D20 is a Color Active Matrix Liquid Crystal Display with an integral Light Emitting Diode (LED) backlight system. The matrix employs a-Si Thin Film Transistor as the active element.

It is a transmissive type display operating in the normally black mode. This TFT-LCD has a 46.96 inch diagonal measured active display area with WUXGA resolution(1080 vertical by 1920 horizontal pixel array) Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes.

Gray scale or the brightness of the sub-pixel color is determined with a 10-bit gray scale signal for each dot,thus, presenting a palette of more than 1.06Bilion colors.

It is intended to support Public Display where high brightness,super wide viewing angle,high color gamut,high color depth and fast response time are important.



General Features

Active screen size	46.96 inch (1192.87mm) diagonal	
Outline Dimension	1096.0(H) x 640.0(V) x 51.0(D) mm(Typ.)	
Active Area	1039.68(H) x 584.82(V) mm	
Pixel Pitch	0.5415 mm x 0.5415 mm	
Pixel Format	1920 horiz. by 1080 vert. Pixels. RGB stripe arrangement	
Display Colors	10bit 1.06Bilion colors	
Luminance, white	2000 cd/m2(Typ. Center 1 point)	
Power Consumption	427.08 W	Watts(Typ.) (PDD=7.08W PBL=420W)
Weight	16.5Kg (Typ.)	
Display operating mode	Transmissive mode, normally black	
Surface treatments	Hard coating (3H), Anti-glare treatment of the front polarizer	

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2. Absolute maximum ratings

The following are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

Table 1. Absolute Maximum Ratings

Parameter	Symbol	Values		Units	Notes
		Min	Max		
Power Supply Input Voltage	V_{CC}	-0.3	+14.0	V_{dc}	At 25℃
Operating Temperature	T_{OP}	0	+50	℃	1
Storage Temperature	T_{ST}	-20	+60	℃	1
Operating Ambient Humidity	H_{OP}	10	+90	%RH	1
Storage Humidity	H_{ST}	10	+90	%RH	1

Note : 1. Temperature and relative humidity range are shown in the figure below.
Wet bulb temperature should be 39 °C Max, and no condensation of water.

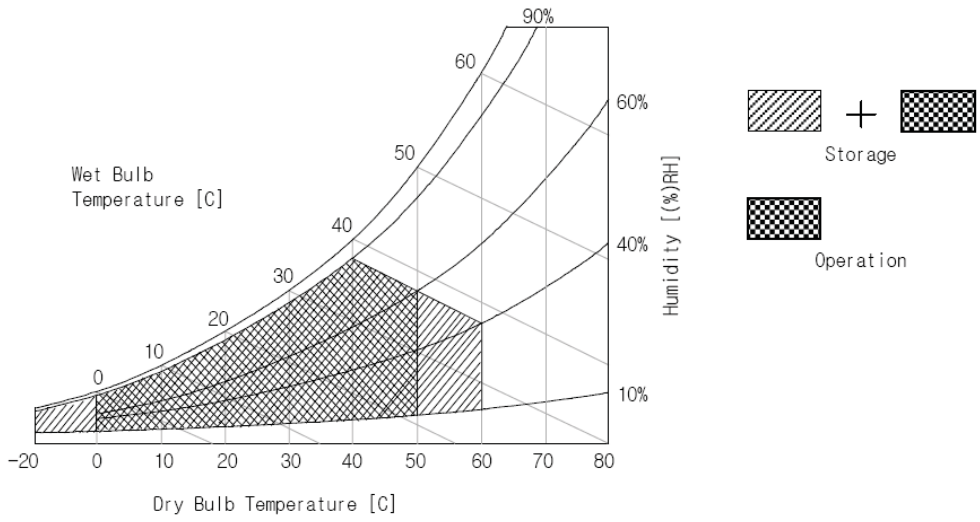

Figure 2. Temperature and relative humidity

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3. Electrical specifications

3-1. Electrical characteristics

The BR470D20 requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. Another which powers the LED Backlight .LED Driver is an internal unit to the LCD.

Table 2. Electrical Characteristics

Parameter	Symbol	Values			Units	Notes
		Min	Type	Max		
Power Supply Input Voltage	V_{CC}	10.8	12.0	13.2	V	
Permissive Power Input Ripple	V_{RF}	-	-	0.1	V	
Power Supply Input Current	I_{CC}	-	0.59	0.77	A	1
Power Consumption	Pc	-	7.08	9.24	Watts	
In Rush Current	I_{RUSH}	-	-	5	A	2
LED Power supply Voltage	V_{BL}	22.8	24	-	V	3
LED Power Supply current	I_{BL}	-	17.5	-	A	
LED BL Power Consumption	P_{BL}	-	420	-	Watts	4
Brightness Adjust	V_{BR-B}	10	-	100	%	On Duty
Linear Brightness Adjust	V_{BR-A}	0	-	3.3	V	
Life Time		50,000			Hrs	5

Note: Do not attach a conducting tape to lamp connecting wire. If the lamp wire attach to conducting tape TFT-LCD Module have a low luminance.

1.The specified current and power consumption are under the VCC=12.0V, 25°C, f_V (frame frequency)=60Hz condition.

2.The duration of rush current is about 2ms. And V_{CC} rise time is 500us ± 20%.

3.Operating voltage is measured under 25°C.

4.The LED Backlight power consumption shown above include LED Diver Module under 25°C.

5.The life time is determined as the time at which brightness of lamp is 50% compared to that of initial value at the typical lamp current on condition of continuous operating at 25°C.

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3-2. Interface Connections

LED BackLight Driver 14pin connectors is shown in the table 4.

Table 3. Module connector pin configuration

No	Symbol	Description	No	Symbol	Description
1	GND	Ground	27	Bit Select	'H' = 10Bit (D)
2	NC	No Connection	28	RA2N	SECOND CHANNEL A-
3	NC	No Connection	29	RA2P	SECOND CHANNEL A+
4	NC	No Connection	30	RB2N	SECOND CHANNEL B-
5	NC	No Connection	31	RB2P	SECOND CHANNEL B+
6	NC	No Connection	32	RC2N	SECOND CHANNEL C-
7	LVDS Select	'H' =JEIDA , 'L' = VESA	33	RC2P	SECOND CHANNEL C+
8	VBR_EXT	External VBR	34	GND	Ground
9	VBR_OUT	VBR output	35	RCLK2N	SECOND CLOCK CHANNEL Clk-
10	DCR_Enable	'H' = Enable , 'L' = Disable	36	RCLK2P	SECOND CLOCK CHANNEL Clk+
11	GND	Ground	37	GND	Ground
12	RA1N	FIRST CHANNEL A-	38	RD2N	SECOND CHANNEL D-
13	RA1P	FIRST CHANNEL A+	39	RD2P	SECOND CHANNEL D+
14	RB1N	FIRST CHANNEL B-	40	RE2N	SECOND CHANNEL E-
15	RB1P	FIRST CHANNEL B+	41	RE2P	SECOND CHANNEL E+
16	RC1N	FIRST CHANNEL C-	42	GND	Ground
17	RC1P	FIRST CHANNEL C+	43	GND	Ground
18	GND	Ground	44	GND	Ground
19	RCLK1N	FIRST CLOCK CHANNEL Clk-	45	GND	Ground
20	RCLK1P	FIRST CLOCK CHANNEL Clk+	46	GND	Ground
21	GND	Ground	47	NC	No connection
22	RD1N	FIRST CHANNEL D-	48	VLCD	Power Supply +12.0V
23	RD1P	FIRST CHANNEL D+	49	VLCD	Power Supply +12.0V
24	RE1N	FIRST CHANNEL E-	50	VLCD	Power Supply +12.0V
25	RE1P	FIRST CHANNEL E+	51	VLCD	Power Supply +12.0V
26	GND	Ground	-	-	-

Notes:

1.All GND(ground) pins should be connected together and should also be connected to the LCD's metal frame.

2.All VCC(power input) pins should be connected together.

3.All NC pins should be separated from other signal or power.

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Table 4. LED Backlight Driver connector pin configuration

Pin No	Symbol	Description	Board A (CN1101) Board B (CN2101)	Board A (CN1106) Board B (CN2106)	Note
1	VBL	Power Supply +24.0V	VBL	VBL	
2	VBL	Power Supply +24.0V	VBL	VBL	
3	VBL	Power Supply +24.0V	VBL	VBL	
4	VBL	Power Supply +24.0V	VBL	VBL	
5	VBL	Power Supply +24.0V	VBL	VBL	
6	GND	Backlight Ground	GND	GND	
7	GND	Backlight Ground	GND	GND	
8	GND	Backlight Ground	GND	GND	1
9	GND	Backlight Ground	GND	GND	
10	GND	Backlight Ground	GND	GND	
11	NC	No connection	OPEN or GND	Don't Care	
12	VON/OFF	Backlight ON/OFF control	VON/OFF	Don't Care	
13	EXTVBR-B	External PWM	EXTVBR-B		2
14	GND	Backlight Ground	GND		3

Notes:

1. The backlight ground should be common with LCD metal frame.
2. This Pin support Linear Dim Voltage control brightness.

Voltage	Function	Voltage	Function
0V	Minimum Duty (10%)	3.3V	Maximum Duty (100%)

3. #14 pin Must be Connected to GND.

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3-3. Power Sequence

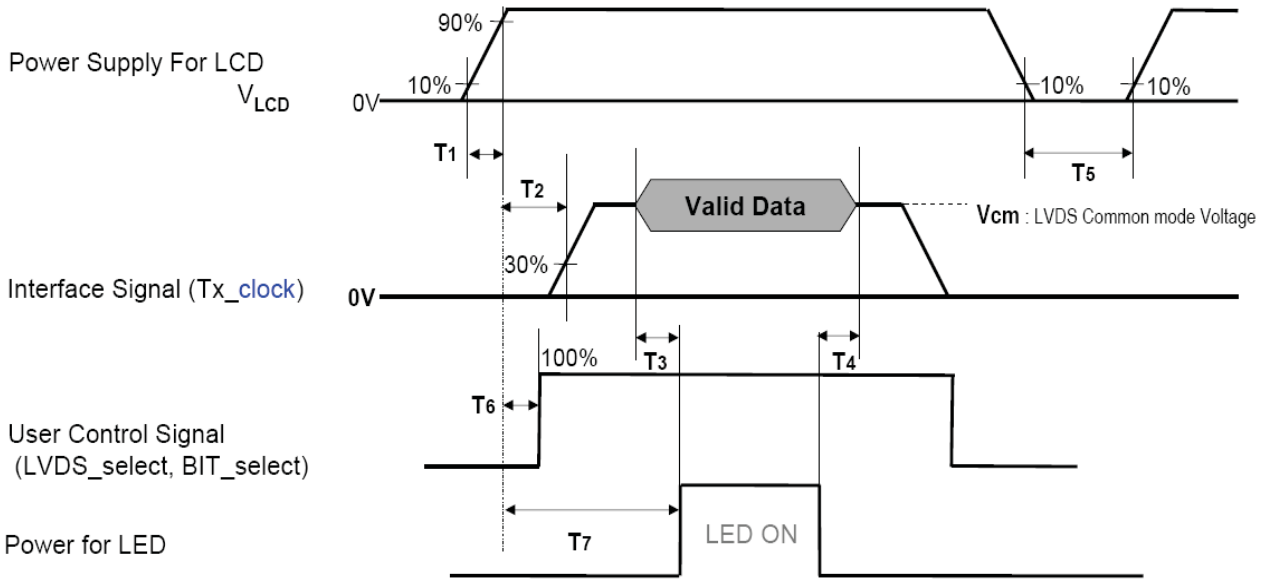

Table 5. Power sequence time delay

Parameter	Values			Units
	Min	Type	Max	
T_1	0.5	-	20	ms
T_2	0.5	-	-	ms
T_3	200	-	-	ms
T_4	200	-	-	ms
T_5	2.0	-	T_2	s
T_6	-	-	-	ms
T_7	0.5	-		s

Notes:

1. Please avoid floating state of interface signal at invalid period.
2. When the interface signal is invalid, be sure to pull down the power supply for LCD VCC to 0V.
3. Lamp power must be turn on after power supply for LCD and interface signals are valid.

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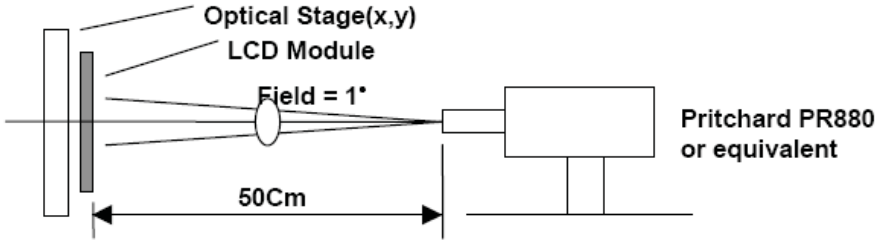
4. Optical Specifications

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 30 minutes in a dark environment at 25 °C. The values specified are measured at an approximate distance 50cm from the LCD surface at a viewing angle 0 °.



[Figure 9] Optical characteristic measurement equipment and method

Table 6. Optical characteristics

Parameter	Symbol	Values			Units
		Min	Type	Max	
Contrast ratio	CR	1000	1400	-	
Surface luminance, white	L_{wH}	1850	2000	-	cd/m2
White luminance uniformity	ΔY	80	85	-	%
Response time	G to G	-	5	8	ms
Color Temperature			10000		K
Color Gamut(NTSC %)			72		%
Viewing angle (by CR >10)	x axis, right(Φ=0°)	-	89	-	degree
	x axis, left (Φ=180°)	-	89	-	
	y axis, up (Φ=90°)	-	89	-	
	y axis, down (Φ=270 °)	-	89	-	

Notes:

1.Contrast Ratio(CR) is defined mathematically as :

CR = Surface Luminance at all white pixels / Surface Luminance at all black pixels

It is measured at center 1-point.

2.Surface luminance is determined after the unit has been 'ON' and 1Hourafterlighting the backlight in a dark environment at 25±2° C. Surface luminance is the luminance value at center 1-point across the LCD surface 50cm from the surface with all pixels displaying L255 white.

3.The White luminance uniformity on LCD surface is then expressed as :

ΔY = (Minimum Luminance of 9points / Maximum Luminance of 9points) * 100

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5. Mechanical Characteristics

Table 7. provides general mechanical characteristics for the model BR470D20. Please refer to Figure 15,16 regarding the detailed mechanical drawing of the LCD.

Table 7. Mechanical characteristics

Outside dimensions	Horizontal	1096.0mm
	Vertical	640.0mm
	Depth	51.0mm
Active display area	Horizontal	1039.68mm
	Vertical	584.82mm
Weight(approximate)	16Kg(Typ.), 16.5Kg(Max.)	
Surface Treatment	Hard coating(3H) Anti-glare treatment of the front polarizer	

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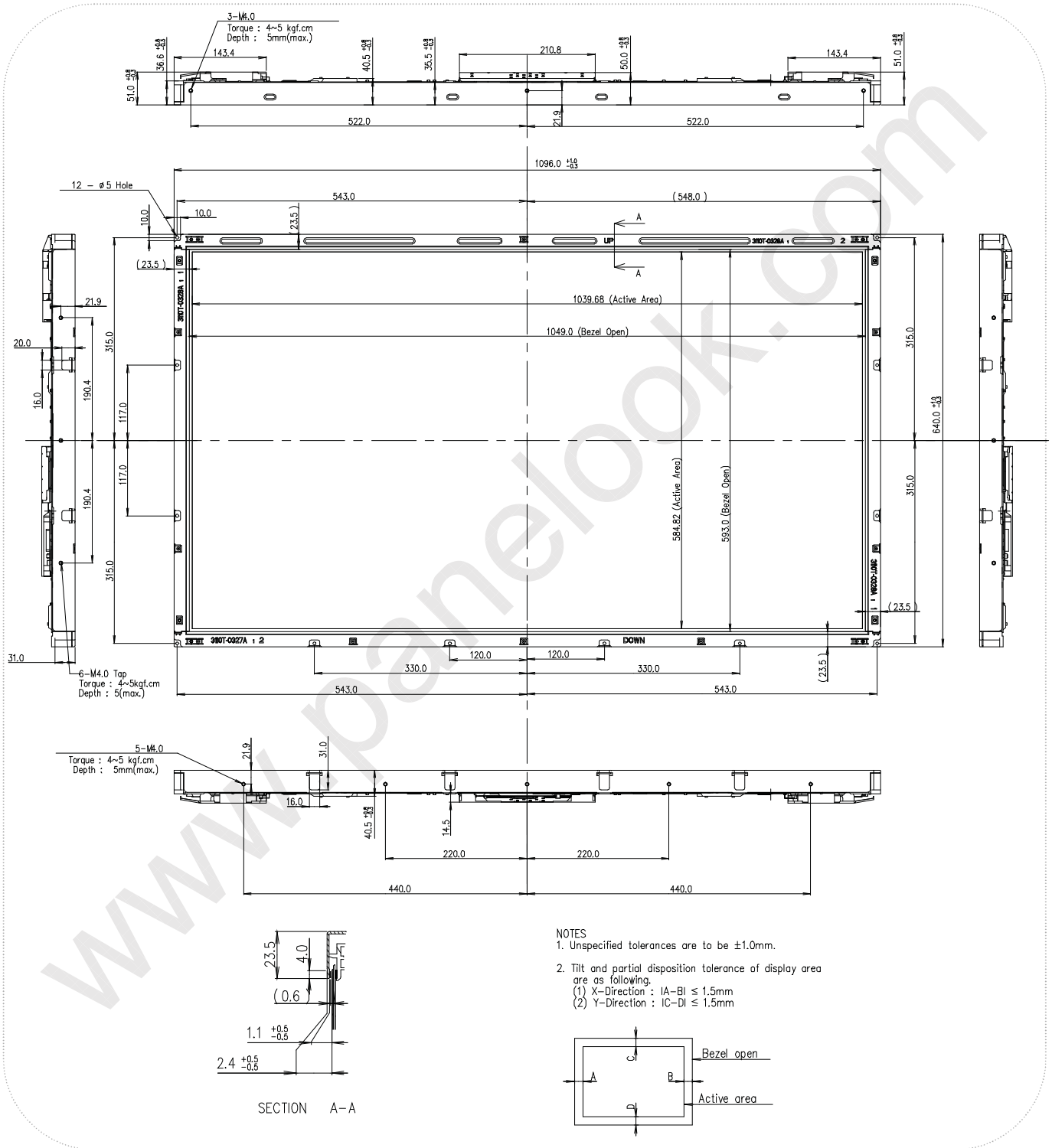
<FRONT VIEW>



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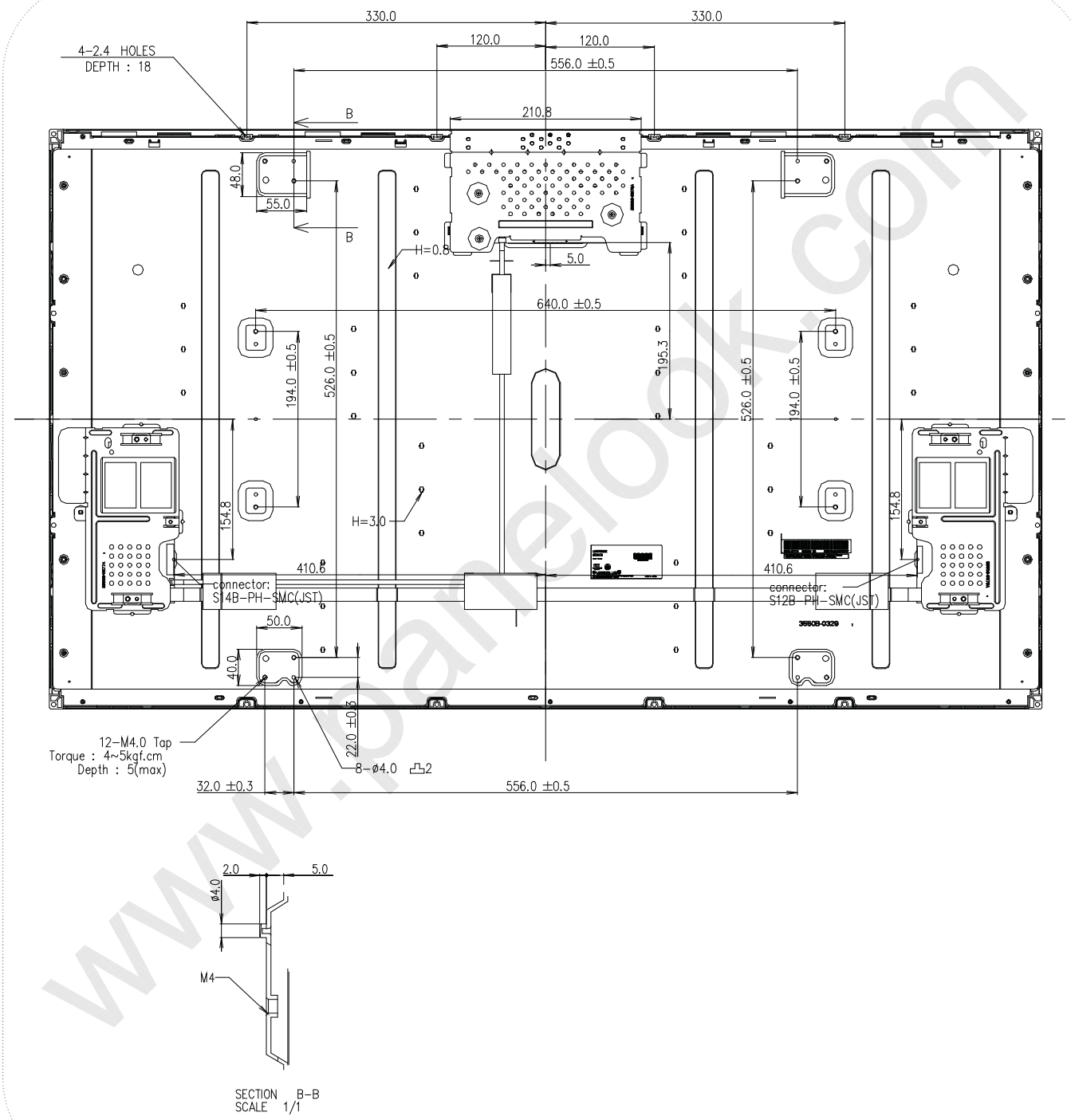
<REAR VIEW>



SECTION B-B
SCALE 1/1

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